1 WHAT IS CLAIMED IS:

1 1. A method of processing data packets comprising:

2   determining an actual arrival rate of data packets and a

3 number of data packets stored in a queue; and

4   initiating transmission of data packets in the queue

5 based on the actual arrival rate and the number of data

6 packets in the queue.

1 2. The method of claim 1 including receiving the data

2 packets from a program; and transmitting the data packets to a

3 device.

1 3. The method of claim 1 including receiving the data

2 packets from a device; and transmitting the data packets to a

3 program.

1 4. The method of claim 1 wherein transmitting the data

2 packets in the queue includes transmitting at least one burst

3 of data packets, wherein each burst contains a number of data

4 packets sufficient to maximize throughput.

1 5. The method of claim 1 further including storing a data

2 packet in the queue if the actual arrival rate is less then

3 the first threshold value, and scheduling a future interrupt

4 event to cause processing of data packets from the queue.

1 6. The method of claim 1 further including comparing the

2 actual arrival rate of data packets to a first threshold.

1   7.   The method of claim 6 further including transmitting a

2   data packet without storing the data packet in the queue, if

3   the actual arrival rate is greater then the first threshold

4   value.

1   8.   The method of claim 6 wherein the actual arrival rate is

2   based on a weighted average of time intervals between a

3   predetermined number of previous data packets and the first

4   threshold value corresponds to a predetermined arrival rate.

1   9.   The method of claim 1 further including comparing the

2   number of data packets to a second threshold.

1   10.   The method of claim 9 wherein the second threshold value

2   represents a number of unprocessed data packets.

1   11.   An article comprising a computer-readable medium that

2   stores computer-executable instructions for causing a computer

3   system to:

4   determine an actual arrival rate of data packets and a

5   number of data packets stored in a queue; and

6   initiate transmission of data packets in the queue based

7   on the actual arrival rate and the number of data packets in

8   the queue.

1   12.   The article of claim 11 including receiving the data

2   packets from a program; and transmitting the data packets to a

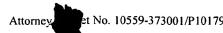3   device.

1 13. The article of claim 11 including receiving the data

2 packets from a device; and transmitting the data packets to a

3 program.

1 14. The article of claim 11 wherein transmitting the data

2 packets in the queue includes transmitting at least one burst

3 of data packets, where each burst contains a number of data

4 packets sufficient to maximize throughput.

1 15. The article of claim 11 further including instructions to

2 store a data packet in the queue if the actual arrival rate is

3 less then the first threshold value, and scheduling a future

4 interrupt event to cause processing of data packets from the

5 queue.

1 16. The article of claim 11 further including instructions to

2 compare the actual arrival rate of data packets to a first

3 threshold, wherein the actual arrival rate is based on a

4 weighted average of time intervals between a predetermined

5 number of previous data packets, and wherein the first

6 threshold value corresponds to a predetermined arrival rate.

1 17. The article of claim 16 further including instructions to

2 transmit a data packet without storing the data packet in the

3 queue, if the actual arrival rate is greater then the first

4 threshold value.

1 18. The article of claim 11 further including instructions to

2 compare the number of data packets to a second threshold,

3   wherein the second threshold value represents a number of

4   unprocessed data packets.

1   19.   A data packet processing device comprising:

2   a source of data packets;

3   a destination of data packets; and

4   a data packet processing engine, configured to determine

5   an actual arrival rate of data packets and a number of data

6   packets stored in a queue and initiate transmission of data

7   packets in the queue based on the actual arrival rate and the

8   number of data packets in the queue.

1   20.   The device of claim 19 wherein the processing engine is

2   configured to transmit the data packets in the queue includes

3   ·transmitting at least one burst of data packets, where each

4   burst contains a number of data packets sufficient to maximize

5   throughput.

1   21.   The device of claim 19 further including storing a data

2   packet in the queue if the actual arrival rate is less then

3   the first threshold value, and scheduling a future interrupt

4   event to cause processing of data packets from the queue.

1   22.   The device of claim 19 further including comparing the

2   actual arrival rate of data packets to a first threshold,

3   wherein the actual arrival rate is based on a weighted average

4   of time intervals between a predetermined number of previous

5   data packets, and wherein the first threshold value

6   corresponds to a predetermined arrival rate.

1   23.   The device of claim 22 further including transmitting a

2   data packet without storing the data packet in the queue, if

3   the actual arrival rate is greater then the first threshold

4   value.

1   24.   The device of claim 19 further including comparing the

2   number of data packets to a second threshold, wherein the

3   second threshold value represents a number of unprocessed data

4   packets.

1   25.   A computer network system comprising:

2   an input device for receiving data packets from the

3   network;

4   an output device for transmitting data packets to the

5   netwok;

6   wherein each device includes a data packet processing

7   engine configured to determine an actual arrival rate of data

8   packets and a number of data packets stored in a queue and

9   initiate transmission of data packets in the queue based on

10   the actual arrival rate and the number of data packets in the

11   queue.

1   26.   The system of claim 25 wherein transmitting the data

2   packets in the queue includes transmitting at least one burst

3   of data packets, where each burst contains a plurality of data

4   packets sufficient to maximize throughput.

1 27. The system of claim 25 further including storing a data

2 packet in the queue if the actual arrival rate is less then

3 the first threshold value, and scheduling a future interrupt

4 event, wherein the occurrence of the future interrupt event

5 causes processing of data packets from the queue.

1 28. The system of claim 25 further including comparing the

2 actual arrival rate of data packets to a first threshold,

3 wherein the actual arrival rate is based on a weighted average

4 of time intervals between a predetermined number of previous

5 data packets, and wherein the first threshold value

6 corresponds to a predetermined arrival rate

1 29. The system of claim 28 further including transmitting a

2 data packet without storing the data packet in the queue, if

3 the actual arrival rate is greater then the first threshold

4 value.

1 30. The system of claim 25 further including comparing the

2 number of data packets to a second threshold, wherein the

3 second threshold value represents a number of unprocessed data

4 packets.